

Attorney's Docket No.: 17026-002001

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A fuel system, comprising:  
an injector configured to receive fuel and to transmit fuel in droplet form;

a conduit having inner walls defining a reaction region, downstream of said injector, said reaction region to receive fuel from the injector; and

a cylindrical in shape reaction rod, positioned completely in the reaction region, the reaction rod having a convex end, in the reaction region and facing to receive the fuel from the injector, the reaction rod further having a concave end at a second end opposite the convex end, and said reaction rod having a cylindrical body formed by walls that extend between said concave end and said convex end, where said fuel from said injector is directed to flow between said walls of said reaction rod and said inner walls of said conduit in a direction from the convex end to the concave end, and wherein said reaction rod reduces an inner surface area of said conduit for said fuel flow

Attorney's Docket No.: 17026-002001

relative to an area of said conduit which does not include said reaction rod therein.

2. (Original) The system of claim 1, wherein the reaction region comprises an inner region of a reaction tube.

3. (Original) The system of claim 2, wherein the reaction tube comprises a magnetically polarizable material.

4. (Original) The system of claim 1, wherein the reaction rod comprises a magnetically polarizable material.

5. (Original) The system of claim 4, wherein the material comprises steel.

6. (Original) The system of claim 1, further comprising a vacuum generator in communication with the reaction region, the vacuum generator configured to reduce a pressure of the reaction region with respect to a region exterior to the reaction region.

7. (Original) The system of claim 6, wherein the vacuum generator comprises a venturi.

Attorney's Docket No.: 17026-002001

8. (Original) The system of claim 6, wherein the vacuum generator comprises a turbopump.

9. (Original) The system of claim 1, further including an engine configured to be powered using fuel from the reaction region.

10. (Original) The system of claim 9, further including a fuel transport tube positioned between the engine and the reaction region, the fuel transport tube configured to transport fuel from the reaction region to the engine.

11. (Original) The system of claim 10, wherein the fuel transport tube comprises a non-magnetic material.

12. (Original) The system of claim 11, wherein the non-magnetic material comprises copper.

13. (Original) The system of claim 9, further including an exhaust pipe configured to transport exhaust from the engine to an exterior region.

14. (Original) The system of claim 13, wherein the reaction region comprises a reaction tube, the reaction tube

Attorney's Docket No.: 17026-002001

positioned at least partially within at least a portion of the exhaust pipe.

15. (Currently amended) An engine system, comprising:  
a fuel storage region;  
an injector configured to receive fuel from the fuel storage region and to transmit fuel in droplet form;  
a conduit having inner walls defining a reaction region, downstream of said injector, said reaction region to receive fuel from the injector; and  
a cylindrical in shape reaction rod, positioned completely in the reaction region, the reaction rod having a convex end, in the reaction region and facing to receive the fuel from the injector, the reaction rod further having a concave end at a second end opposite the convex end, and said reaction rod having a cylindrical body formed by walls that extend between said concave end and said convex end, where said fuel from said injector is directed to flow between said walls of said reaction rod and said inner walls of said conduit in a direction from the convex end to the concave end, and wherein said reaction rod reduces an inner surface area of said conduit for said fuel flow relative to an area of said conduit which does not include said reaction rod therein.

Attorney's Docket No.: 17026-002001

16. (Original) The system of claim 15, further including an engine in communication with the reaction region.

17. (Original) The system of claim 16, wherein the engine includes one or more cylinders.

18. (Original) The system of claim 16, wherein the engine comprises an engine selected from the group consisting of a turbine engine, a diesel engine, a steam engine, and a gas engine.

19. (Original) The system of claim 17, further comprising a vacuum generator in communication with the reaction region.

20. (Original) The system of claim 19, wherein the vacuum generator is selected from the group consisting of a venturi and a vacuum pump.

21. (Original) The system of claim 17, wherein the engine system is included in a vehicle.

22. (Previously presented) A fuel system, comprising:  
an injector configured to receive fuel and to transmit fuel in droplet form;

Attorney's Docket No.: 17026-002001

a conduit having inner walls defining a reaction region, downstream of said injector, said reaction region to receive fuel from the injector, and said reaction region defining an axis along said reaction region;

a cylindrical in shape reaction rod, positioned completely in the reaction region and movable along said axis within the reaction region, the reaction rod having a first fuel receiving end, in the reaction region and facing to receive the fuel from the injector, the reaction rod further having a second end opposite the first fuel receiving end, said second end receiving fuel that has passed said first end;

a first stop positioned at least partially in the reaction region proximate to the first fuel receiving end of the reaction rod and in a location that allows said reaction rod to move along said axis, but preventing said reaction rod from moving along said axis beyond a position of said first stop; and

a second stop positioned at least partially in the reaction region proximate to the second end of the reaction rod and in a location that allows said reaction rod to move along said axis, but preventing said reaction rod from moving along said axis beyond a position of said second stop.

23. (Original) The system of claim 22, wherein the first fuel receiving end of the reaction rod has a convex shape.

Attorney's Docket No.: 17026-002001

24. (Original) The system of claim 23, wherein said reaction rod has a cylindrical body formed by walls that extend between said first fuel receiving end and said second end, where said fuel from said injector is directed to flow between said walls of said reaction rod and said inner walls of said conduit, and wherein said reaction rod reduces an inner surface area of said conduit for said fuel flow relative to an area of said conduit which does not include said reaction rod therein.

25. (Original) A method of providing fuel to an engine, comprising:

generating fuel droplets from a fuel source;

transmitting the fuel droplets to a reaction region within a conduit, proximate to a reaction rod;

~~generating energized fuel by~~ transmitting the fuel droplets to the reaction region, and past a the reaction rod, where a wherein the reaction rod has a first convex fuel receiving end of the reaction rod first receives said fuel, and after passing said first end, the fuel travels to [[and]] a second concave fuel transmitting end; and

transmitting the ~~[[energized]]~~ fuel which has passed said first and second ends of said reaction rod, to the engine.

Attorney's Docket No.: 17026-002001

26. (Original) The method of claim 25, wherein said reaction rod reduces a cross sectional area of a fuel transmitting conduit, in an area where said reaction rod is located ~~generating energized fuel comprises electrically transforming the fuel droplets.~~

27. (Original) The method of claim 25, further comprising reducing the pressure in the reaction region.

28. (Original) The method of claim 25, wherein the reaction rod comprises a magnetically polarizable material.

29. (Original) The method of claim 25, wherein the reaction region is enclosed by a reaction tube.

30. (Original) The method of claim 29, wherein the reaction tube comprises a magnetically polarizable material.

31. (Previously presented) The system of claim 1, wherein the injector comprises a fuel injector.

32. (Previously presented) The system of claim 1, wherein the injector comprises an atomizer.



Attorney's Docket No.: 17026-002001

33. (Previously presented) The system of claim 1, wherein  
the injector comprises a misting nozzle.